

We claim:

1. A process for the preparation of ethyleneamines by reacting monoethanolamine (MEOA) with ammonia in the presence of a catalyst in a reactor (1) and separating the resulting reaction product, which comprises reacting ethylenediamine (EDA) obtained during the separation in a separate reactor (2) in the presence of a catalyst to give diethylenetriamine (DETA), and the resulting reaction product is passed to the separation of the reaction product resulting from reactor 1.
- 10 2. The process for the preparation of ethyleneamines according to claim 1, where the ethyleneamines are EDA, DETA, aminoethylethanolamine (AEEA), piperazine (PIP) and/or triethylenetetramine (TETA).
- 15 3. The process for the preparation of ethyleneamines according to claim 1 or 2, where the proportion of DETA is greater than 20% by weight.
4. The process according to any of the preceding claims, wherein the reaction in reactor 1 is carried out in the presence of a transition metal catalyst or a zeolite.
- 20 5. The process according to the preceding claim wherein the transition-metal-catalyzed reaction in reactor 1 is carried out in the presence of hydrogen.
6. The process according to any of the preceding claims, wherein the separation of the reaction product resulting from reactor 1 takes place by multistage distillation.
- 25 7. The process according to any of the preceding claims, wherein the separation of the reaction product resulting from reactor 1 takes place in two separation sequences by multistage distillation, where in the first separation sequence firstly ammonia, water and if appropriate hydrogen present are separated off, and in the second separation sequence a separation into EDA, PIP, MEOA, DETA, AEP, HEP, AEEA, TETA and higher ethyleneamines takes place.
8. The process according to any of the preceding claims, wherein the reaction in reactor 2 is carried out in the presence of a transition metal catalyst, a zeolite or a phosphate catalyst.
- 30 9. The process according to the preceding claim, wherein the transition-metal-catalyzed reaction in reactor 2 is carried out in the presence of hydrogen.

10. The process according to any of claims 7 to 9, wherein the reaction product resulting from reactor 2, comprising ammonia and DETA, is passed to the first separation sequence of the separation of the reaction product resulting from reactor 1.

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11. The process according to any of claims 7 to 9, wherein ammonia and if appropriate hydrogen is separated off from the reaction product resulting from reactor 2 (separation sequence 3) and the reaction product is then passed to the second separation sequence of the separation of the reaction product resulting from reactor 1.

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12. The process according to the preceding claim, wherein the reaction of the EDA to give DETA and the removal of the ammonia is carried out in a reaction column.

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13. The process according to any of the preceding claims, wherein ammonia that is produced during the separation of the reaction product resulting from reactor 1 is returned to reactor 1.

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14. The process according to either of claims 11 and 12, wherein the ammonia separated off from the resulting reaction product of reactor 2 or the ammonia separated off from the reaction column is returned to reactor 1.